

Velocity

Velocity- speed with a direction

Velocity	Speed
-Formula: Distance/Time -Gives Direction -Can Change When Speed or Direction Changes	-Formula: Distance/Time -Does Not Give Direction

The velocity of an object inside or connected to another object is the same as that object
Ex.

The coffee cup in a car is traveling at the same velocity as the car.

Resultant Velocity

Depends on direction of the two objects:

When direction of two objects is the same

- **add** the velocities

When the direction of the two objects is opposite

- **subtract** the velocities

Resultant Velocity Examples

1. A train is traveling at 100 m/s north and you roll a tennis ball north at 4 m/s. What is the tennis ball's resultant velocity?

Answer- Since the train and the tennis ball are moving in the same direction(north), you add both velocities.

So $100 \text{ m/s North} + 4 \text{ m/s North} = 104 \text{ m/s North}$

2. You are on a moving walkway at the airport that is traveling 2 m/s South. You decide to turn around and walk the other way (against the motion) at 1m/s north. What is your resultant velocity.

Answer- Since you and the walkway are going in opposite directions, the velocities would be subtracted.

So $2 \text{ m/s South} - 1 \text{ m/s North} = 1 \text{ m/s South}$ (you always take the direction of the larger velocity)